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External Stabilization of the Chronic Flail Elbow

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This case study involves an 87 year old female 3 years s/p resection of infected total elbow arthroplasty. The patient was placed in a cast following resection, followed by attempts at external bracing for stability. Custom bracing had included both articulating and non-articulating braces that did not provide the patient with what she felt to be satisfactory stabilization.

The patient was referred to physical therapy services at UIHC on 8/16/05 for custom orthoplast splinting following an episode of “popping” in her left elbow which further decreased internal stabilization and caused intermittent pain, especially with gross movement during sleep. Prior to “popping” episode, the patient reported some stability at elbow from soft tissue, with the ability to produce some flexion and extension torque about the axis of the elbow.

The patient was evaluated on the date of referral, with evaluation showing minimal soft tissue stabilization and no muscular control of the left elbow joint. Shoulder, forearm, and hand motion were generally intact, indicating muscular attachment at a scar tissue pseudo-capsule. Pt. reported no pain with manipulation at elbow, or with muscular firing at shoulder, forearm or hand.

A posterior arm based elbow splint in approximately 30 degrees of elbow flexion to maximize left upper extremity function. The patient was instructed in splint care, and skin conditions or fitting problems that would indicate that further splint modification was necessary.

The patient called the department 2 days after placement or the orthoplast splint to report that she was no longer utilizing the splint due to complications donning/doffing, and the feeling that it was not improving her overall function.

A second splint was fabricated from Delta Cast, a focused rigidity casting material. The material allows for greater flexibility while maintaining structural stability for splinting needs. The splint was advanced to approximately a 60 degree angle of elbow flexion to improve posterior stability against brachioradialus and wrist extensor musculature. Four points of closure were utilized to provide global compression and stability. The patient has demonstrated compliance and satisfaction with the current splinting system. She states that it has improved her pain control with sleeping, and allows for greater use and control of her left hand for functional activity within the home.

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